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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,167	07/30/2001	Leslie G. Fritzemeier	05770-157001/ AMSC-569	2120

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EXAMINER
PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 07/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/918,167	Fritzmeier et al
Examiner	**Group Art Unit**
M.L. Pulsett	1762

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

P riod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 3/12/02.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-27 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-27 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of Referenc (s) Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Revi w, PTO-948

☐ Int rvi w Summary, PTO-413

☐ Notice of Informal Pat nt Application, PTO-152

☐ Other _____

Office Action Summary

1. The abstract of the disclosure is objected to because essentially repeating the barely adequate title for the abstract is insufficient. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

The attempt to incorporate subject matter into this application by reference to a page and 1/3 of listed references is improper because there is no indication what aspect or topic of these very long list of reference is of interest or why, with all of each reference being incorporated. Also, it is improper to incorporate other references that incorporate references, and most of these references are non-US patent references, none supplied to the files, hence are not available to be checked or reviewed. If any information is essential, the non-US patent references are also improper for that reasons

3. Claims 9, 14-15, 19 & 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9 and 22 require the depth to be about ≥ 5nm, but it depends from claim 8 and thus contradicts the previously required limitation of depth about ≤ 50mn, so it is unclear if claim 9's range should stop at about 50 nm or not.

Claims 9, 14 and 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Due to the above range uncertainty, where previously excluded values are included, claims 9 and 22 may be considered not properly further limiting.

Claim 14 requires "the surface region to be textured", but this was already required by the independent claim, hence this claim also appears to not further limit, and it is also uncertain what further limitation it might have been intended to convey.

The first part of claim 15 is clear enough, with the relative angles of beams and substrates described, but last part makes little sense or is ambiguous, as it appears to say that

the texture region (which is now a crystal plane) is perpendicular to its self, which is not logical. It might also be intended to mean the crystal plane in the texture surface region is oriented perpendicular to the plane of the textured surface (much more logical). Would --a crystal plane is formed in the textured surface region, which is perpendicularly oriented to the surface of the textured region-- supply the intended meaning more clearly? Also, see claim 19.

4. The examiner notes that the term "texture" has a broad range of meanings including: the deposition or manner of union of the particles of a body or substance; or the visual or tactile surface characteristics and appearance of something; overall structure; or something composed of closely interwoven elements; etc. (from Webster's 9th, page 1220). Any conventional meaning will be applicable to the present term in the claims. The examiner notes that a specific definition is given to "biaxially textured" at the bottom of page 2, but this more specific term is never used in the claims.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 6, 8-9, 13-14 and 16-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Russo et al.

In Russo et al, see the abstract; Fig. 1; col. 1, lines 14-21; summary; col. 3, lines 25-41; col. 4, lines 35- col. 5, line 4 and 50- col. 6, line 14 and 28- col. 7, line 4, and Example I-IV, esp. III, for teachings of employing an ion beam that may use Ar or oxygen to bombard a substrate that may be non-crystalline, in an environment of vapor and oxygen (i.e. reactive species) to form an intermediate layer (thus changing from a first chemical composition to a second as the claimed change does not exclude the addition of material) that is biaxially oriented (i.e. textured). The substrate may be further deposited on to form a superconductor film as in Ex. IV, which maintains the flow of oxygen and is at an elevated temperature, thus covering applicants' claims 16-17.

7. Claims 2-5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russo et al.

Russo et al only teach use of "an ion beam", however use of multiple verses single beams or sources is an obvious variation depending on size of source and area to be treated, and lacking any other significant effects cause by use of multiple beams. The number of beams would depend on the size considerations and would have been obvious to choose accordingly. As applied to Russo et al's Examples II or III, they would all be at 55^0 angle of incident, all parallel to each other inorder to produce taught conditions, so their relative angle to each other would have been zero (0^0).

8. The publications to Neumuller et al or Iijima et al (2001/00060402 A1 = 6,214,772 B1 or PN 5,656,378) have essentially equivalent teachings to Russo et al for purposes of the above rejection. Belouet and Schoop et al are of further interest, but not prior art.

9. Claims 10, 18-22 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russo et al as applied to claims 1-6, 8-9, 13-17 above, and further in view of Do et al or Jiang et al.

While Russo et al teach that their process may employ any non-crystalline substrate materials, with various listed ceramics, they do not teach nitrides specifically. Either of the references of Do et al (abstract; figures 1-4, col. 1, generally; col. 2, lines 14-22+ and 50-55+; col. 3, lines 14-40; col. 4, line 11-59; and col. 6, lines 12-48), or Jiang et al (col. 3, lines 54-62 and col. 7, line 64- col. 8, line 32), teach the use of amorphous silicon nitride substrates or layers to deposit textured or oriented MgO via ion beam assisted deposition (IBAD) process analogous to that of Russo et al, hence it would have been obvious to one of ordinary skill in the art to employ α-Si_3N_4 substrates or layers in the process of Russo et al with the expectation of producing subsequent buffer layers with the thought and desired orientations, because Russo et al suggested non-crystalline substrates generally, with α-Si_3N_4 being demonstrated to be effective, and especially because Russo et al suggested oxide films include the MgO exemplified in the secondary references. It is also noted that both the secondary references deposit subsequent textured oxide films.

10. Claims 1, 6-7 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ouhata et al.

In Ouhata et al, see the abstract; figures; col. 2, line 19-29 and 65- col. 3, line 16; col. 4, lines (7-16 conventional) 17-68; col. 6, lines 3-34; col. 7, line 50- col. 8, line 21; and claims for teachings of ion bombarding with a reactive element in the presence of a reactive gas or vapor,

and chemically changing the surface from one compound to another. The process is taught to be applicable to oxides, sulfides or carbides of metal to change them to nitride when employing N ion beam, and to make oxides of metal nitrides or sulfides or carbides when using O ion beam. While Ouhata et al's exemplary reactive vapor or gases are carbon or hydrocarbons, by the use of O or N ion beams, where inherently not every ion in any beam will react, there will be some oxygen or nitrogen thus present, reading on the claimed "comprising a reactive species" for O or N. While Ouhata et al has no discussion of "texturing" of the surface that is modified, it has been inherently textured in the broad meaning of the word, because in altering its chemistry one inherently alters its bond structure and surface characteristics to some degree, so it is "textured".

11. Claims 2-5, 8-9, 11-14, 18 and 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouhata et al.

Ouhata et al does not discuss multiple beams, however obviousness arguments as applied in section 7 above are again applicable. While Ouhata et al does not discuss the specific metal nitrides of applicants' dependant claims, it would have been obvious to employ the process of Ouhata to change metal nitrides generally to their corresponding oxide, as it would have been a matter of routine experimentation to determine the appropriate reducing vapor or gas, and the reference suggests that the process is broadly applicable to metal nitrides. Particular thickness, while not discussed, would have been determined by desired enduse and energy of the ions employed, hence by routine experimentation.

12. Claims 1, 6-9 and 16-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Fossum et al.

In Fossum et al, see the abstract; Fig. 1; col. 3, lines 20-68; col. 4, lines 6-7 (note 45 angstroms is "about 5 nm", thus reads on claim 9); col. 5, lines 10-16 (amorphization by ion

bombardment) and 33-42 (alternate or additional use of N_2); and claims, especially 1, 7, 9-12 and 18-19.

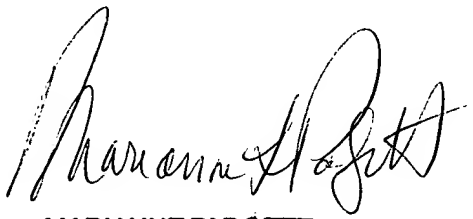
13. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al.

While plural ion beams are not discussed, the obviousness as set forth above in section 7 again applies.

14. Other art of interest that employs ion beams to effect orientation in surfaces or surface depositions include Nagasaka et al; Yoshida et al; Nakanishi et al; Springer et al, Okuno et al and the Japanese patent to Yamaki et al.

15. Any inquiry concerning this communication from the examiner should be directed to M. L. Padgett whose telephone number is (703) 308-2336. The examiner can generally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m.; and fax phone numbers are (703) 872-9310 (regular); (703) 872-9311 (after final); and (703) 305-6078 (unofficial).

M.L. Padgett/dh 7/15/03
July 21, 2003



MARIANNE PADGETT
PRIMARY EXAMINER